osteogenic lineage and the effects of a selective Rho-kinase inhibitor, Y-27632, on cell viability and pluripotency.
Methods: Following 2-dimensional culture on a feeder layer, hESCs were treated with Y-27632. Live/dead assays and stage-specific embryonic antigen-1 expression were used to assess viability and pluripotency, respectively. The hESCs were encapsulated and transferred to a 3-dimensional perfusion bioreactor with osteogenic growth media to stimulate differentiation. On day 21, the cells were analysed for differentiation using Alizarin red S-staining and osteonectin immunocytochemistry.
Results: Y-27632 maintained hESC survival and pluripotency. Following 3-dimensional culture, Y-27632-treated hESCs showed increased osteogenic differentiation.
Conclusion: The use of Y-27632 may represent a novel method of enhancing bone yield whilst maintaining hESC survival and pluripotency in-vitro.

THE ASSOCIATION OF CANCER STEM CELLS AND CHEMO-RESISTANCE IN BREAST, COLON AND PROSTATE CANCER CELLS

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Background: The Cancer Stem Cell (CSC) theory suggests that tumours consist of a small proportion of highly tumourigenic cells termed CSCs, involved in the proliferation, metastasis and chemo-resistance. CSCs express cell surface markers i.e. CD44 and CD24 in breast cancer, CD133 in colon cancer and CD44 in prostate cancer. Purpose: To demonstrate that CSC markers are over-expressed in human cancer cell lines, associated with chemo-resistance and metastasis.
Materials & Methods: A tetrazolium based colorimetric cell viability assay was performed to access the chemoresistance of MCF-7 breast and C170HM2 colon CSCs, while resistant cells were subjected to immunofluorescence for the expression of CSC markers. Breast (MCF-7 and MDA-MB-231), colon (C170HM2 and AP5LV) and prostate (PC3M) xenograft mouse models were subjected to immunohistochemical staining for the expression of CSC markers.
Results: Chemo-resistant MCF-7 adriamycin and paclitaxel breast cancer cell lines expressed high levels of CD44 in vivo and in vitro. CD133 expression was elevated in colon cancer lung metastasis site (AP5LV) but not the primary tumour site. CD133 and CD44 expression was elevated in the poorly vascularised subcutaneous sites suggesting they may be up-regulated in response to stress.
Conclusion: CD44 was found to be a robust marker for chemoresistance in breast cancer.

COGNITIVE DISTRACTION WORSENS ENDOVASCULAR PERFORMANCE: EFFECTS RELATED TO EXPERIENCE

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Background: Endovascular interventionalists often perform complex procedures under unsuitable environmental conditions including noise, time constraints and interruptions. The effect of these distractions on performance may be negated by technical automation.
Aims: To evaluate the effect of adverse environmental conditions on endovascular performance in recruits with varying levels of experience.
Methods: All participants performed an identical renal artery angioplasty procedure on a virtual reality simulator under distracted (pre-recorded interruptions) and undistracted conditions. Three groups were recruited; highly experienced (>500 interventional procedures) interventional radiologists ($n = 11$), pre-trained proficient residents ($n = 12$) and medical students ($n = 10$). Performance was assessed by simulator recorded metrics and by post-hoc video ratings of the fluoroscopy screen and hand movements using procedure specific (min– max score) and global rating scales (min-max score).
Results: Distraction significantly affected the performance of pre-trained novices in terms of total procedure time (574 vs 534 sec, $p = 0.04$), procedure specific (19 versus 23, $p = 0.014$) and global rating scoring (25 vs 27, $p = 0.29$). Procedure specific performance of experts deteriorated in the presence of distraction (19 vs 22, $p = 0.029$).
Conclusions: Cognitive distraction negatively influences endovascular performance most notably in subjects with less clinical experience. Experienced interventionalists appear to 'block out' distraction maintaining dexterity but qualitative performance is impeded.

IMPROVING QUALITY OF COLON CANCER SURGERY THROUGH SURGICAL EDUCATION

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The importance of the plane of rectal cancer surgery is well established, however, evidence for a similar effect in colon cancer is limited. We have previously reported better outcomes with mesocolic plane surgery and shown that complete mesocolic excision with central vascular ligation (CME & CVL) produces an oncologically superior specimen. We received specimen photographs and pathology data from 280 primary colon cancer resections; 99 from surgeons trained in CME & CVL and 181 from surgeons prior to training. The plane of dissection was assessed and tissue morphometry performed. CME & CVL surgeons more frequently operated in the mesocolic plane (74% vs. 37%, $p < 0.0001$) and removed more lymph nodes per specimen (median 27 vs. 19, $p < 0.0001$). They also removed a greater length of bowel (median 316 vs. 266mm, $p < 0.0001$), and more mesentery between the tumour and vascular tie (median 104 vs. 89mm, $p = 0.033$). We have shown that CME & CVL surgeons are more likely to operate in the mesocolic plane, remove more tissue both centrally and longitudinally, and achieve a greater lymph node yield. This provides further evidence for the oncological superiority of CME & CVL and shows that surgical education can directly influence the quality of the specimen produced.

A STUDY ON PATIENT ELIGIBILITY FOR, AND ECONOMIC IMPACT OF BARIATRIC SURGERY

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Bariatric surgery produces significant weight reduction in addition to proven healthcare cost savings. This study aims to assess the suitability of patients referred for bariatric surgery and the subsequent economic impact of receiving surgery. A retrospective analysis was performed of NHS

cases referred to an upper GI unit in a large DGH for consideration for bariatric surgery over a three year period. Data was obtained for 71 patients with mean BMI 53.2 kg/m2. According to NICE guidelines 89% patients fulfilled criteria for consideration for bariatric surgery, with 63% fulfilling criteria for consideration as "first-line" management. All suitable patients were referred to the regional NHS commissioning body but only one patient received weight loss surgery. We estimate that if all patients in our series meeting NICE "first-line" criteria underwent surgery there would be net healthcare savings of £1,134,000 in the first ten postoperative years, which if extrapolated for the region rises to savings of £6,048,000 per year. Although the majority of referred patients are suitable very few are offered surgery despite significant cost-savings over the medium to long term. Increased availability of bariatric surgical services in the NHS is needed to improve the health of patients and reduce the financial burden of obesity-related disease.

BODY MASS INDEX AND TIME TO MOBILISE POST PRIMARY TOTAL HIP ARTHROPLASTY

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Introduction: High body mass index (BMI) may prolong a patient's hospital stay following elective joint replacement surgery due to delayed progression of mobility post-operatively. The aim of this study is to examine any relationship between body mass index and progression of mobility following primary total hip arthroplasty.
Methods: The time taken to initially get out of bed, start mobilisation, confidently mobilise with sticks, negotiate stairs safely and to be discharged from inpatient physiotherapy was recorded for 110 consecutive patients undergoing primary total hip arthroplasty in one unit. Spearman's rho was used to identify any relationships between BMI and the time taken to achieve each of these mobility milestones.
Results: No significant relationships were found between BMI and the time taken to reach each of the five mobility milestones. Spearman's rho (day got up) = −0.138, p = 1.59; Spearman's rho (mobilised = −0.72, p = 0.462; Spearman's rho (mobilised with sticks) = −0.101, p = 0.301; Spearman's rho (stairs complete) = −0.76, p = 0.790; Spearman's rho (inpatient physiotherapy complete) = −0.58, p = 0.578.
Conclusions: Increasing BMI appears to cause no delay in post-operative mobilisation following primary total hip arthroplasty. High BMI should therefore not be the sole reason for excluding patients from receiving elective total hip arthroplasty.

FRAGILITY FRACTURE PREVENTION AT A PRIMARY CARE LEVEL

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Aim: To audit the risk stratification and subsequent secondary prevention of osteoporosis in women over the age of 65 with a history of fragility fractures. Audit standards guided by the National Osteoporosis Guideline Group and the governmental Direct Enhanced Service agreement. Risk stratification achieved using the FRAX® assessment tool for osteoporosis.
Method: All female patients aged over 65 with a history of fragility fracture retrospectively analysed using the practice database. Multiple data abstracted relating to fracture risk. Assessment of DEXA guided diagnosis. Risk analysed using the FRAX® tool. Current treatment compared to that recommended through guidelines and level of risk.
Results: N = 51. Age range 65–96. Subdivided into <75 & >76yrs. Proportion of <75 with osteoporosis confirmed by DEXA = 12.5%(standard 100%), proportion of those <75 with confirmed osteoporosis who are receiving bone sparing therapy = 100%(100%). Proportion >76 receiving bone sparing therapy = 31.6%(100%). Poor recording of osteoporosis risk factors. Average 10yr risk of major fracture = 26.4%, of hip fracture = 12%. 5 high-risk patients identified, all under treated.
Conclusion: Osteoporosis targets are clearly not being reached. Risk stratification is not being undertaken and cost effective secondary prevention is not being utilised effectively. The FRAX® tool has validated utility and should be implemented into patient work up following fracture.

ADULT HAND LACERATIONS- HOW ACCURATE IS OUR DIAGNOSIS?

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Hand injuries rank as second most common category in A&E medicolegal claims. Accurate diagnosis/treatment is essential, with high index of suspicion and low threshold for exploration. St Andrew's centre, Broomfield, Chelmsford, is a tertiary level referral unit for hand injuries with significant throughput everyday. Most patients are reviewed in the daily consultant / senior trainee–lead trauma clinic, with entries recorded on computerised trauma database. We analysed the pattern of tendon and nerve injuries and accuracy of pre-operative assessment compared to operative findings. The database over 12-month period was reviewed. After exclusions, 1670 sequential cases of adults with below-elbow, soft tissue injuries and complete clinical / operative notes were included. There were 1573 structures injured in 823 digits-994 tendons and 568 nerves. Knife/glass injuries predominated and 89% operated within 24hrs. Anatomical accuracy was >98% for both tendons and nerves. Border nerves (index radial/ little finger ulnar) were particularly at risk. Assessment of severity (nil, partial/ total) was accurate in 68%. This findings support our practice of low threshold for exploration. Distribution and accuracy by structure and zone are discussed, with recommendations for diagnostically difficult regions. Knowledge of potential pitfalls may prevent inappropriate choices of anaesthetic and aids prioritisation.

SURVIVAL COMPARISONS FOR PATIENTS PRESENTING WITH PERITONEAL SURFACE DISEASE AND UNDERGOING NON-CURATIVE RESECTION OF THE PRIMARY TUMOURS IN ADVANCED COLORECTAL CANCERS

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Introduction: Colorectal Cancers (CRCs) presenting with peritoneal surface disease are associated with poor survivals and only selected patients are offered curative surgical procedures. We analysed the survivals for peritoneal surface disease in patients undergoing non-curative resection of the primary tumours in advanced colorectal cancers.
Methods: Patients with stage IV CRCs undergoing resection of the primary tumour and postoperative chemotherapy for the residual metastatic disease were identified from the Leicester Colorectal Cancer database (1998–2007). Kaplan-Meier survival analyses were performed for patients with following subsets of metastasis sites: Group A; Peritoneal Surface